IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant:	Carlambrogio Bianchi	Group Art Unit:	3743
Serial No.:	10/725,359	Examiner:	Duong, Tho V.
Filed:	December 1, 2003		
Title:	BENT COIL FOR DUCTED UNIT		

APPEAL BRIEF

Mail Stop - Appeal Brief
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Subsequent to the filing of the Notice of Appeal on January 20, 2006, Appellant hereby submits its brief. The Commissioner is authorized to charge Deposit Account No. 03-0835 in the name of Carrier Corporation $500.00 for the appeal brief fee. Any additional fees or credits may be charged or applied to Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds, P.C.

REAL PARTY IN INTEREST

The real party in interest is Carrier Corporation, the assignee of the entire right and interest in this Application.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 1-4, 6, 9, 10, 13-17, and 24-25 stand finally rejected under 103(a) as being obvious over Martin, Sr. (US 5,284,027) in view of Sullivan (US 5,195,332). Claims 20 and 21 stand rejected under 103(a) as being obvious over Martin in view of Sullivan and further in view of Ikeya (US 5,482,115) or Nagakura (US 5,174,366). Claims 22 and 23 stand rejected under 103(a) as being obvious over Martin in view of Sullivan and further in view of Vandervaart (US 5,189,887).

STATUS OF AMENDMENTS

All amendments have been entered.

SUMMARY OF CLAIMED SUBJECT MATTER

As shown in Figure 4 with reference to Figure 2, this invention relates to an apparatus for a ducted heating and cooling unit including a bent coil 200 having at least one vertical fin 208 (page 3, lines 20-25). At least two fans 252 move unconditioned air towards the bent coil 200 (page 4, lines 17-20). The bent coil 200 and the at least one vertical fin 208 direct the unconditioned air moving through the bent coil 200 and the conditioned air moving from the bent coil 200. The bent coil 200 and the vertical fin 208 move the air in a first direction and a second direction different from the first direction (page 3, lines 20-25). This basic invention is set forth in claim 1.

Claim 2 depends from claim 1 and requires that the first direction of the outlet air is longitudinal and that the second direction of the outlet air is at an angle with respect to the first direction (page 3, line 24). Claim 20 depends from claim 1 and adds that the bent coil 200 includes a plurality of tubes that are aligned vertically and staggered horizontally (page 4, lines 6-17). Claim 22 depends from claim 1 and requires that the substantially vertical fin 208 is an aluminum fin (page 3, line 23).

Independent claim 6 also relates to an apparatus for a ducted heating and cooling unit including a bent coil 200 having at least one substantially vertical fin 208 that is capable of dividing the airflow into a first direction and a second direction different from the first direction (page 3, lines 20-25). At least two fans 252 are disposed in an upstream direction from the bent coil 200 and

move unconditioned air towards the bent coil 200 (page 4, lines 17-20). A duct 256 houses the at least two fans 252 and the bent coil 200 (page 3, lines 2-5).

Claim 21 depends from claim 6 and adds that the bent coil 200 includes a plurality of tubes that are aligned vertically and staggered horizontally (page 4, lines 6-17). Claim 23 depends from claim 6 and requires that the substantially vertical fin 208 is an aluminum fin (page 3, line 23).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Are claims 1-4, 6, 9, 10, 13-17, and 24-25 properly rejected under 35 U.S.C. 103(a) based on Martin, Sr. (US 5,284,027) in view of Sullivan (US 5,195,332)?

B. Are claims 20 and 21 properly rejected under 35 U.S.C. 103(a) based on Martin, Sr. in view of Sullivan and further in view of Ikeya (US 5,482,115) or Nagakura (US 5,174,366)?

C. Are claims 22 and 23 properly rejected under 35 U.S.C. 103(a) based on Martin, Sr. in view of Sullivan and further in view of Vandervaart (US 5,189,887)?

ARGUMENTS

A. Obviousness of claims 1-4, 6, 9, 10, 13-17, and 24-25 based on Martin, Sr. in view of Sullivan.

Claims 1, 3-4, 6, 9, 10, 13-17, and 20-25

The Examiner finally rejected claims 1, 3-4, 6, 9, 10, 13-17, and 24-25 as being obvious Martin, Sr. in view of Sullivan. The Examiner admits that Martin does not disclose two fans that blow air over a coil. The Examiner states that Sullivan teaches using two fans and that it would be obvious to employ this feature in Martin. Appellant respectfully disagrees.

The present invention is patentable and strikingly different from the combination of Martin and Sullivan. As described by the claims, the present invention is apparatus for a ducted heating and cooling unit, comprising:

> a bent coil having a coil surface through which outlet air is discharged in a first direction and a second direction different than the first direction;

at least one substantially vertical fin disposed in the bent coil, wherein said at least one substantially vertical fin directs the outlet air substantially perpendicular to the coil surface to enable dividing of the outlet air in the first direction and the second direction; and

at least two fans moving unconditioned air towards the bent coil.

Martin discloses a system 350 including a blower 354 that blows air over a coil 355. Martin discloses that a problem with prior art systems is that they are inefficient because air hits the interior of a plenum box, changes direction and exits the plenum box, often after multiple encounters with the interior of the plenum box. A disclosed benefit of Martin is moving air efficiently in the plenum box without encountering the plenum box (column 4, lines 62-65). In Sullivan, the fans 15 cause air to change direction in a housing 11 before moving through the coil 12. As shown in the figures, the air flow path in Sullivan is not straight and would therefore encounter the housing 11. Thus, introducing the multiple fans of Sullivan would cause the air in Martin to change direction, affecting the efficiency of the air flow and ruining a disclosed benefit of Martin. That is, if the fans 15 of Sullivan were employed in Martin, the air would contact the plenum box, which is a result Martin expressly teaches against.

The claimed invention is also not obvious because there is not enough room to employ more than one fan in Martin. Martin discloses a system 350 that moves air across the coil 355 using the blower 354 of a gas or electric furnace (column 2, lines 54-56). The space allotted for the installation of the system 350 is often limited (column 1, lines 36-38). Enlarging the space is often complicated and may require the removal of existing walls or ceilings, among other alterations (column 1, lines 43-46). In Sullivan, the rotating fans 15 are housed in fan housings 16 and driven by one motor 14 located outside the fan housings 16. Because the fans 15 of Sullivan are driven by a motor 14 located outside of the fan housings 16 and in line with the both of the fans 15, the fans 15 require more space than the blower of a gas or electric furnace. A disclosed benefit of Martin is a coil having an expanded face that utilizes minimal installation space. Expanding the face of the coil increases the efficiency of the air conditioning system. Incorporating an additional fan would require more space in the housing 14 of Martin. Also,

using the fans 15 of Sullivan in Martin would increase the size of the housing 14 in Martin. Therefore, it would not be obvious to employ the fans of Sullivan in Martin

The claimed invention is also not obvious because the fan configuration of Sullivan is limited, and an advantage disclosed by Martin is that the coil of expanded face area is "useful in existing housings, enclosures, and available installation space." Further, the coil of expanded face area of Martin is "not limited to a single orientation" (column 2, lines 48-53). In Sullivan, after slipping on the rigidifying bracket 65, "the condensation tray 13 is effectively rigidified and will maintain its relative position with respect to the coil 12, the condensation tray mounting board 18 and the fan board 20" (column 5, lines 40-44). The fan housing outlets 22 of the rotating fans 15 are directly connected to the fan board 20 (column 4, lines 30-35). Thus, the rotating fans 15 are also effectively rigidified and depend on the position of the coil 12. Because the condensation tray 13 collects condensation drippings from the coil 12 (column 5, lines 50-53), the fan coil unit 10 of Sullivan can only be used in configurations where the condensation tray 13 is located beneath the coil 12. Further, the fan coil unit 10 of Sullivan is "designed for mounting in an upright or vertical position" (column 6, lines 51–54). Thus, incorporating the rotating fans 15 of Sullivan into Martin would limit the possible orientations of the coil 12 and ruin a disclosed benefit of Martin because the rotating fans 15 and fan board 20 are attached to the condensation tray 13, which must maintain a position below the coil 12.

The claimed invention is also not obvious because it provides many benefits. One benefit of the current invention is the level of control over the unconditioned air moving towards the bent coil. Because the current invention requires at least two fans moving unconditioned air towards the bent coil, the at least two fans can more specifically to direct unconditioned air towards different areas of the coil.

Thus, the rotating fans 15 of Sullivan do not provide the level of control over the unconditioned air moving towards the bent coil as claimed in the current invention. The claimed invention is not obvious, and Appellant respectfully requests that the rejection be withdrawn.

Claim 2

Claim 2 is also not obvious. Claim 2 recites that "the first direction of the outlet air is longitudinal and the second direction of the outlet air is at an angle with respect to the first

direction." None of the references individually disclose, suggest or teach outlet air with a first direction and a second direction at an angle with respect to the first direction.

Regarding Martin, the Examiner considers the direction of air exiting outlet 108 at the end of the duct to be a first direction, and the direction of air exiting outlet 108 at two sides of the ducts is considered to be a second direction. This is flawed because the Examiner is considering conditioned air discharged through the coil surface in the Appellant's invention to be the same as air exiting the outlets 108 of the duct in Martin. The current invention directs the outlet air in a first direction and a second direction utilizing the coil and at least one vertical fin. Thus, in the Appellant's invention, the air discharged through the **coil** has a first direction and a second direction. The Examiner maintains that, in Martin, the air discharged thorough the outlet of the **duct** outlet 108 has a first direction and a second direction. Claim 2 is not obvious because neither reference discloses outlet air from a coil with a longitudinal first direction and a second direction at an angle with respect to the first direction.

Thus, the rotating fans 15 of Sullivan do not provide the level of control over the unconditioned air moving towards the bent coil as claimed in the current invention. The claimed invention is not obvious and Appellant respectfully requests that the rejection be withdrawn.

B. Are claims 20 and 21 properly rejected under 35 U.S.C. 103(a) based on Martin, Sr. in view of Sullivan and further in view of Ikeya (US 5,482,115) or Nagakura (US 5,174,366)?

Claim 20 and 21

Claim 20 and 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Martin, Sr. in view of Sullivan and further in view of Ikeya or Nagakura. The Examiner contends that it would be obvious to include a plurality of tubes aligned vertically and staggered horizontally together with a combination of Martin and Sullivan. Appellant respectfully disagrees.

The claimed invention is not obvious. Claim 20 depends on patentable claim 1 and is allowable for the reasons set forth above. Claim 21 depends on patentable claim 6 and is allowable for the reasons set forth above. Adding these features to Martin and Sullivan would

not render the claims obvious because it is not obvious to incorporate the fans of Sullivan into Martin for the reasons set forth above in section A. The claimed invention is not obvious, and Appellant respectfully requests that the rejection be withdrawn.

C. Are claims 22 and 23 properly rejected under 35 U.S.C. 103(a) based on Martin, Sr. in view of Sullivan and further in view of Vandervaart (US 5,189,887)?

Claim 22 and 23

Claim 22 and 23 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Martin, Sr. in view of Sullivan and further in view of Vandervaart. The Examiner contends that it would be obvious to include aluminum fins together with a combination of Martin and Sullivan. Appellant respectfully disagrees.

The claimed invention is not obvious. Claim 22 depends on patentable claim 1 and is allowable for the reasons set forth above. Claim 23 depends on patentable claim 6 and is allowable for the reasons set forth above. Adding these features to Martin and Sullivan would not render the claims obvious because it is not obvious to incorporate the fans of Sullivan into Martin for the reasons set forth above in section A. The claimed invention is not obvious, and Appellant respectfully requests that the rejection be withdrawn.

CONCLUSION

For the reasons set forth above, the rejection of all claims is improper and should be reversed. Appellant respectfully requests such an action.

Respectfully Submitted,

CARLSON, GASKEY & OLDS, P.C.

Karin Butchko

Karin H. Butchko
Registration No. 45,864
Attorney for Appellant
400 West Maple Road, Suite 350
Birmingham, Michigan 48009
(248) 988-8360

Dated: March 20, 2006

CERTIFICATE OF FACSIMILE

I hereby certify that this appeal brief is being facsimile transmitted to the United States Patent and Trademark Office, 571-273-8300 on March 20, 2006.

Amy M. Spaulding

Amy M. Spaulding

CLAIM APPENDIX

1. An apparatus for a ducted heating and cooling unit, comprising:

a bent coil having a coil surface through which outlet air is discharged in a first direction and a second direction different than the first direction;

at least one substantially vertical fin disposed in the bent coil, wherein said at least one substantially vertical fin directs the outlet air substantially perpendicular to the coil surface to enable dividing of the outlet air in the first direction and the second direction; and

at least two fans moving unconditioned air towards the bent coil.

2. The apparatus of claim 1, wherein the first direction of the outlet air is longitudinal and the second direction of the outlet air is at an angle with respect to the first direction.

3. The apparatus of claim 1, wherein at least a portion of the bent coil is curved.

4. The apparatus of claim 1, wherein the bent coil has a V-shape profile.

6. A ducted heating and cooling unit, comprising:

a bent coil having a coil surface through which outlet air is discharged in a first direction and a second direction different than the first direction;

at least two fans moving unconditioned air towards the bent coil, wherein the bent coil is disposed in a downstream direction from the at least two fans;

at least one substantially vertical fin disposed in the bent coil, wherein said at least one substantially vertical fin directs the outlet air substantially perpendicular to the coil surface to enable dividing of the outlet air in the first direction and the second direction; and

a duct that houses said at least two fans and the bent coil.

9. The ducted unit of claim 6, wherein the duct includes at least one side opening substantially aligned with the second direction.

10. The ducted unit of claim 6, wherein the bent coil has a V-Shape profile.

13. The ducted unit of claim 6, wherein the bent coil has a C-shape profile.

14. The apparatus of claim 1, wherein the bent coil has a C-shape profile.

15. The apparatus of claim 1, wherein said at least two fans move the unconditioned air in a first air direction and a second air direction different than the first air direction.

16. The ducted unit of claim 6, wherein said at least two fans move the unconditioned air in a first air direction and a second air direction different than the first air direction.

17. The ducted unit of claim 1, further comprising a separation wall disposed between said at least two fans and the bent coil.

20. The apparatus as recited in claim 1, wherein said bent coil includes a plurality of tubes that are aligned vertically and staggered horizontally.

21. The ducted unit as recited in claim 6, wherein said bent coil includes a plurality of tubes that are aligned vertically and staggered horizontally.

22. The ducted unit as recited in claim 1, wherein said substantially vertical fin is an aluminum fin.

23. The ducted unit as recited in claim 6, wherein said substantially vertical fin is an aluminum fin.

24. The ducted unit as recited in claim 1, wherein said unconditioned air moves towards the bent coil in a substantially straight path.

25. The ducted unit as recited in claim 6, wherein said unconditioned air moves towards the bent coil in a substantially straight path.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None

N:\Clients\CARRIER\P00306\PATENT\306appealbrief.doc